

What is claimed is:

1. A tandem axle system, comprising:

5 a first axle having a first brake actuating chamber with a first diaphragm,
said first diaphragm connected to a first brake actuating arm for engaging a first
friction device on said first axle;

a second axle having a second brake actuating chamber with a second
diaphragm, said second diaphragm having a smaller area than said first
diaphragm, said second diaphragm connected to a second brake actuating arm for
10 engaging a second friction device on said second axle; and

at least one control valve in fluid communication with both said first and
said second diaphragms to displace said first and second brake actuating arms and
engage said first and second friction devices on said first and said second axles,
respectively.

- 15 2. The apparatus of claim 1, wherein a displacement of said second brake actuating
arm by said second diaphragm is less than a displacement of said first brake
actuating arm by said first diaphragm.

- 20 3. The apparatus of claim 1, wherein said first and said second brake actuating arms
have a substantially equal length.

4. The apparatus of claim 1, wherein said second brake actuating arm is shorter than
said first brake actuating arm.

5. The apparatus of claim 1, wherein said at least one control valve provides less fluid pressure to said second brake actuating chamber than said first brake actuating chamber.

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6. The apparatus of claim 1, wherein a second control valve is in fluid communication with said second brake actuating chamber, wherein said second control valve provides less fluid pressure to said second brake actuating chamber than fluid pressure provided to said first brake actuating chamber.

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7. A tandem axle system, comprising:

a first axle having a first brake actuating chamber having a first diaphragm, said first diaphragm connected to a first brake actuating arm for engaging a first friction device on said first axle;

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a second axle having a second brake actuating chamber having a second diaphragm, said second diaphragm connected to a second brake actuating arm, said second brake actuating arm shorter than said first brake actuating arm, for engaging a second friction device on said second axle; and

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at least one air control valve in communication with both said first and said second diaphragm for individually engaging said first and said second diaphragms to displace said first and second brake actuating arms and engage said first and second friction devices on said first and said second axles, respectively.

8. The apparatus of claim 7, wherein said second diaphragm has a smaller area than said first diaphragm.
9. The apparatus of claim 7, wherein a displacement of said second brake actuating arm by said second diaphragm is less than a displacement of said first brake actuating arm by said first diaphragm.
10. The apparatus of claim 7, wherein said at least one air control valve provides less fluid pressure to said second brake actuating chamber than said first brake actuating chamber.
11. The apparatus of claim 7, wherein a second air control valve is in fluid communication with said second brake actuating chamber, said second air control valve provides less fluid pressure to said second brake actuating chamber than fluid pressure provided to said first air control valve.

12. A method of braking a tandem axle system, comprising:
- engaging a first friction device on a first axle with a first brake actuating arm connected to a first diaphragm;
- engaging a second friction device on a second axle with a second brake actuating arm connected to a second diaphragm; and
- providing a pre-determined amount of pressurized fluid to said first diaphragm and said second diaphragm to engage said first friction device and said second friction device.
13. The method of claim 12, wherein said second brake actuating arm is shorter than said first brake actuating arm.
14. The method of claim 13, wherein said second brake actuating arm provides a braking force to said second friction device less than a braking force said first brake actuating arm provides to said first friction device.
15. The method of claim 13, wherein said second diaphragm has a smaller area than said first diaphragm.
16. The method of claim 15, wherein said second diaphragm displaces said second brake actuating arm a shorter distance than said first diaphragm displaces said first brake actuating arm.

17. The method of claim 12, wherein an control valve provides less fluid pressure to said second brake actuating chamber than said first brake actuating chamber.
18. The method of claim 12, wherein a first control valve provides an equal fluid
5 pressure to said second brake actuating chamber and to said first brake actuating chamber.
19. The method of claim 18, wherein a second control valve in fluid communication
10 with said second brake actuating chamber communicates a fluid pressure to said second brake actuating chamber less than a fluid pressure communicated to said first brake actuating chamber.